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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,473	09/10/2003	Masao Ozeki	242619US0	2219

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EXAMINER	
SCHECHTER, ANDREW M	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 11/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/658,473	OZEKI ET AL.	
	Examiner	Art Unit	
	Andrew Schechter	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 August 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 9-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 9-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The examiner suggests that the choice of a title indicative of the invention to which the claims are directed should be deferred until the claims are in condition for allowance.

Response to Arguments

2. Applicant's arguments filed 18 August 2006 have been fully considered but they are not persuasive.

The applicant argues [see p. 10] that the specific structure of *Okuda* is not "directly applicable to a reverse mode PDLC device" so the proposed combination in the rejection lacks motivation. This is not persuasive. As explained in the rejection, *Okuda* teaches an analogous display in which images are superimposed on an outside view ahead, and teaches specifically that the whole construction should be transparent [else the non-transparent peripheral frame would obstruct the outside view]. It is this teaching; not the specific structure of *Okuda*, which is relied upon. The previous rejections are therefore repeated below, modified as necessary by the amendments to the claim language.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Asakawa et al.,* U.S. Patent No. 5,892,598 in view of *Date et al.,* U.S. Patent No. 6,618,104, in view of *Nishiyama et al.,* U.S. Patent No. 6,507,385, in view of *Niiyama et al.,* WO 2000/23539, and further in view of *Okuda et al.,* U.S. Patent No. 6,144,424.

[The examiner notes that U.S. Patent No. 6,723,393 to *Niyama* belongs to the same patent family as *Niiyama '539*, so the examiner cites it as a rough translation of *Niiyama '539*.]

Asakawa discloses [see Figs. 8, 27, and 28, for instance] a composite display device comprising at least one display member [52] configured to display an image by superimposing the image on a background image [whatever is on the left in the figures] transmitted through the at least one display member, the at least one display member comprising an electro-optical element [polymer dispersed liquid crystal device] including a pair of substrates which would have transparent electrodes [col. 4, lines 10-12, and see below on the electrodes] to which a voltage is applied, and a composite layer [polymer dispersed liquid crystal] interposed between the transparent electrodes, the electro-optical element being configured to transmit light and scatter light.

Asakawa does not appear to explicitly state that light is transmitted when no voltage is applied and scattered where the voltage is applied [sometimes called "reverse mode", as opposed to the "normal mode" when a voltage causes transmission]. *Date* discloses an analogous polymer-dispersed liquid crystal device and teaches using the reverse mode [col. 14, line 24 – col. 15, line 20]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use this mode, motivated by the teaching of *Date* that this is preferable to improve viewing angle and obtain strong scattering properties.

The combined device of *Asakawa* in view of *Date* does not explicitly have the feature that the light transmittance under application of no voltage is at least 80%. [*Asakawa* itself gives multiple examples for which this is the case, col. 20, lines 48 and 56, for instance, but it is not necessarily true of the combined device.] It would have been obvious to one of ordinary skill in the art at the time of the invention to have the light transmittance under application of no voltage be at least 80%, motivated by the desire to clearly observe the first display member through a highly transparent second display member; higher transparency improves the quality of the display device. [An alternative way of stating this is that the transmittance of the display is a result-effective variable whose optimization (making it as large as possible subject to other constraints) would have been obvious to one of ordinary skill in the art at the time of the invention; see MPEP 2144.05. Making it within the range above 80% would therefore have been obvious to one of ordinary skill in the art at the time of the invention.]

Asakawa in view of *Date* discloses a PDLC composite device, with liquid crystal and cured product of a curable compound soluble to the liquid crystal, but does not explicitly disclose the detailed structure recited, such as transparent electrodes and adhesive spacers. *Nishiyama* discloses [see Fig. 1, for instance] an analogous PDLC device having a pair of substrates [1, 2] with transparent electrodes [5, 6], a composite layer [4] between them, the composite layer comprises a liquid crystal cured/resin composite containing liquid crystal and a cured product of a curable compound soluble to the liquid crystal, and adhesive spacers [3] arranged in the composite layer. It would have been obvious to one of ordinary skill in the art at the time of the invention to use such electrodes and spacers, motivated by the desire to apply an electric field while allowing light to pass through, and keep the substrates apart at the desired spacing.

Asakawa in view of *Date* in view of *Nishiyama* does not necessarily disclose the remaining limitation of claim 1, that the curable compound comprises a compound selected from the group of compounds in Formula (1) and Formula (2). *Niiyama* discloses the use of such a curable compound [see Fig. 1, whose compound is the same as that in the present application's Fig. 3(d)] in an analogous liquid crystal/cured resin composite. It would have been obvious to one of ordinary skill in the art at the time of the invention to use this compound, motivated by *Niiyama's* teaching that doing so enables the optical element to have high reliability and high contrast, produced easily and with a short curing time [see *Niyama '393*, col. 3, lines 33-50].

The above device does not necessarily disclose the amended limitation "wherein a peripheral portion of the electro-optical element, excluding a connecting portion to an

external circuit formed in the peripheral portion of the electro-optical element, is transparent". *Okuda* discloses an analogous device in which "images or characters [are] displayed on a display in superimposed fashion on an outside view ahead" [col. 1, lines 10-12]. *Okuda* teaches that its device is an improvement over prior art devices which "generally lack the concept that the whole construction should be made transparent" [col. 2, lines 29-33, emphasis added]. *Okuda* discloses using a transparent resin layer in the periphery, so that "the entire display area except the pattern [meaning the image in the display] always stays transparent" [col. 34, lines 25-35]. It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to have the peripheral portion, excluding a connecting portion to an external circuit formed in a peripheral portion of the electro-optical element, be transparent, motivated by *Okuda's* teaching that this is desirable (it allows unobstructed view of the outside view ahead).

Claim 1 is therefore unpatentable.

Asakawa discloses light sources [123] configured to illuminate the electro-optical element, and the light sources emitting colored lights of at least two colors [see Fig. 28] sequentially [col. 16, lines 25-26], each of the colored lights emitted from the light sources having a frequency of at least 40Hz [col. 16, line 35], wherein the at least one display member displays in one or more colors by causing at least a portion of a display region of the electro-optical element to be a light scattering state in association with illumination of the electro-optical element by one or more colored lights [col. 16, lines 31-44]. Claim 12 is therefore unpatentable as well. The light sources are able to emit a

color of red, blue, or green independently [see Fig. 28], so claim 13 is also unpatentable. The at least one display member displays at least 8 colors [col. 16, lines 38-39; a time-sequential full color display of this kind using the three primary colors red, green, and blue can generally produce any desired color in the rainbow], so claim 14 is also unpatentable. A field sequential driving method wherein a change of light source colors of the light sources is associated with a display state of the electro-optical element is used, so claim 15 is also unpatentable.

Nishiyama discloses using adhesive spacers disposed in the composite layer which would have been obvious to one of ordinary skill in the art at the time of the invention to use, as discussed above, so claim 11 is also unpatentable.

5. Claims 3, 4, 9, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Asakawa, Date*, *Nishiyama*, *Niiyama*, and *Okuda* as applied above, and further in view of *Kobayashi et al.,* U.S. Patent No. 6,261,650.

Asakawa in view of *Date* does not disclose using the composite display device for at least displaying a speed of an automobile. *Kobayashi* does disclose using an analogous LCD device for displaying the speed of an automobile [see Figs. 15-17]. It would have been obvious to one of ordinary skill in the art at the time of the invention to do so with the device of *Asakawa* in view of *Date*, motivated by the desire to provide a more information in a convenient manner on an automobile dashboard [as taught by *Kobayashi*]. Claim 16 is therefore unpatentable.

The at least one display member in this case superimposes the image on the background image displayed by a gauge [the speedometer, tachometer, fuel gauge, etc.

shown in *Kobayashi*], and this gauge is a physical body, so claims 3 and 4 are also unpatentable [even without *Kobayashi*, when *Asakawa* uses it in a car, the image would be superimposed on a person standing in front of the car, so claim 4 would not be patentable]. *Asakawa* in view of *Date* discloses an illumination means [as above], and the driving voltage in the car is supplied by a battery [either the car battery or a separate battery, there being no other way of supplying the voltage], so claim 9 is also unpatentable.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Asakawa, Date*, *Nishiyama*, *Niiyama*, and *Okuda* as applied above, and further in view of *Kobayashi et al.,* U.S. Patent No. 6,261,650 and *Hisamitsu et al.*, U.S. Patent No. 6,618,103.

Kobayashi also discloses disposing an anti-reflection film on the surface of the electro-optical element [col. 20, lines 24-26]. It would have been obvious to one of ordinary skill in the art at the time of the invention to do so in the above device, motivated by the desire to reduce reflections and improve the display quality. *Hisamitsu* discloses an ultraviolet ray shielding film disposed on a surface of an analogous device, and it would have been obvious to one of ordinary skill in the art at the time of the invention to use such, motivated by the teaching that this prevents deterioration of the liquid crystal [col. 16, lines 44-57]. Claim 10 is therefore unpatentable as well.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Asakawa, Date*, *Nishiyama*, *Niiyama*, and *Okuda* as applied above, and further in view of *Hirai et al.,* U.S. Patent No. 5,103,327.

Asakawa in view of *Date* does not explicitly disclose that the electro-optical element scatters light at a haze value of at least 80% in the light scattering state. *Hirai* does disclose an analogous PDLC device with high light transmission in the light transmitting state and haze greater than 80% in the scattering state [col. 6, lines 37-41]. It would have been obvious to one of ordinary skill in the art at the time of the invention to have such a haze value in the device of *Asakawa* in view of *Date*, motivated by the increased light scattered to the viewer's eye when the haze is high, which results in a more visible display. Claim 2 is therefore unpatentable.

8. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Asakawa, Date*, *Nishiyama*, *Niiyama*, and *Okuda* as applied above, and further in view of *Sullivan,* U.S. Patent No. 6,100,862.

Asakawa in view of *Date* does not disclose that the at least one display member comprises a plurality of display members. *Sullivan* discloses an analogous display device in which a plurality of display members [see Fig. 1] are arranged. It would have been obvious to one of ordinary skill in the art at the time of the invention to do so in the above device, motivated by the desire to produce a 3D image. Claim 5 is therefore unpatentable.

Sullivan discloses the required control unit [18] configured to control a display status of the plurality of display members, wherein the control unit controls the plurality of display members to display the same display pattern [a functional limitation, which the device is capable of], and causes one display member to be in a display state [on],

while the other is in a non-display state [off] [col. 3, lines 3-21], so claim 6 is also unpatentable.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Nelms can be reached at (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Andrew Schechter
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Technology Center 2800
3 November 2006